



Short Communication

A record of the Balkan Stripe-necked Terrapin, *Mauremys rivulata* (Testudines: Geoemydidae) from the Azov Sea Coast in the Crimea

¹Oleg V. Kukushkin and ²Daniel Jablonski

¹Department of Herpetology, Zoological Institute of Russian Academy of Sciences, Universitetskaya Emb. 1, 199034 Saint Petersburg, RUSSIA ²Department of Zoology, Comenius University in Bratislava, Mlynská dolina, Ilkovičova 6, 842 15 Bratislava, SLOVAKIA

Keywords. *Mauremys rivulata*, first record, Crimea, Kerch peninsula, Azov Sea, overseas dispersal, occasional relocation

Citation: Kukushkin O V, Jablonski D. 2016. A record of the Balkan Stripe-necked Terrapin, *Mauremys rivulata* (Testudines: Geoemydidae) from the Azov Sea Coast in Crimea. *Amphibian & Reptile Conservation* 10(2) [General Section]: 27–29 (e129).

Copyright: © 2016 Kukushkin and Jablonski. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercialNoDerivatives 4.0 International License, which permits unrestricted use for non-commercial and education purposes only, in any medium, provided the original author and the official and authorized publication sources are recognized and properly credited. The official and authorized publication credit sources, which will be duly enforced, are as follows: official journal title *Amphibian & Reptile Conservation*; official journal website <amphibian-reptile-conservation.org>.

Received: 03 September 2016; **Accepted:** 7 November 2016; **Published:** 30 November 2016

The Crimean herpetofauna comprises such true Eastern-Mediterranean species as *Mediodactylus kotschyi* and *Zamenis situla* (Sillero et al. 2014). The occurrence of these species in the Crimea is isolated and could suggest Late Pleistocene-Holocene range expansion across the short-existing land bridge between the Anatolia, the Crimea, and the Balkans or even ancient human-mediated dispersal. At the same time, there are some other thermophilic species (*Triturus karelinii*, *Podarcis tauricus*, *Pseudopus apodus*, *Dolichophis caspius*, *Elaphe sauromates*) that probably colonized the Crimea during former interglacial epoch from the southern refugia (Kukushkin 2013a).

It is well known that the distribution range of the European Pond Turtle *Emys orbicularis* includes the Crimea (Szczerebak 1966; Fritz et al. 2009). Here we report a record of another pond turtle from the Azov Sea region of the Crimea. During field work an adult female of *Mauremys rivulata* (Valenciennes, 1833) was captured on Cape Khroni in north-east of the Kerch Peninsula between the villages Yurkino and Osoviny on June 19, 2016 (circa 11 a.m., Moscow time). The terrapin was found among several individuals of *E. orbicularis* near the shore of a small and shallow natural lake with *Phragmites australis* (less than 1 m in depth and about 10 m in diameter). The water body is located on the lower terrace of seaside landslide, just a few meters above sea level (45.43267°N, 36.59960°E; Fig. 1A). There are outcrops and heaps of

limestone rocks on the abrasion-accumulative sea coast below the lake (Fig. 1B). In general, the locality remains typical of habitats of *M. rivulata* within the area of its natural distribution.

The water body is weakly streaming due to the cold-water source. According to our observations, the local herpetofauna comprises two species of amphibians (*Bufo viridis*, *Pelophylax* cf. *bedriagae*) and six species of reptiles (*P. apodus*, *E. sauromates*, *D. caspius*, *Natrix natrix*, *N. tessellata*, and *E. orbicularis*). The local *E. orbicularis* population is quite numerous, since at least 12 specimens have been observed. The Red-eared Slider (*Trachemys scripta elegans*) is absent in this lake, although this alien species has been found in many points of the Crimea including the city of Kerch. In May 2016 2–3 *T. scripta* adults and up to 19 *E. orbicularis* specimens were counted on 400–500 m along the Melek-Chesme river enclosed in the concrete channel in the central area of Kerch.

The coloration and pattern of *M. rivulata* is typical for the species (Fig. 2A–C). The terrapin has a total straight-line carapace length of 131.3 mm, body mass of 354.7 g, and was healthy and strong.

The natural distribution range of *M. rivulata* is confined to the Eastern Mediterranean region, with the northern distribution limit at 43°N in coastal Croatia and at about 42°N in the Bulgarian Black Sea coast (Sindaco and Jeremčenko 2008). The species is widespread along

Correspondence. Emails: ¹vipera_kuk@ukr.net (Corresponding author); ²daniel.jablonski@balcanica.cz



Fig. 1. *M. rivulata* capture locality at Kerch peninsula, Eastern Crimea: A. small natural lake; B. Azov sea coast opposite to the lake.



Fig. 2. *M. rivulata* from the Crimea: A. dorsal view; B. ventral view; C. details of the head coloration.

the Southeast European and West Asian sea coasts, including those of the Marmara Sea and the Bosphorus (Tok and Çiçek 2014). The records closest to the Crimea (with the minimum distance of about 440 km) are known to the west from Ereğli (Kocaeli peninsula) in the Northwestern Anatolia (Fritz and Freytag 1993; Fritz et al. 2008).

Undoubtedly, our single record of this species does not allow any inferences about the origin of the individual. However, Kerch city is a large merchant port and this circumstance increases the probability of an accidental translocation. It should be noted that several turtles identified as Caspian Stripe-necked Terrapins, *Mauremys caspica* (Gmelin, 1774) were recorded in the Sevastopol area in 1980s (Kukushkin 2013b). These specimens were probably brought to the Crimea from the Transcaucasian region, where *M. caspica* is fairly widespread. However, in contemporary interpretation these records may be also related to *M. rivulata*.

On the other hand, it is well known that *M. rivulata* occurs in habitats along sea coasts and enters brackish water (e.g., Broggi 2012). Moreover, this species is capable of extensive transoceanic dispersal (Mantziou et al. 2004; Vamberger et al. 2014). Thus, we also can not exclude the possibility of natural overseas dispersal across the Black Sea, taking advantage of surface sea currents carrying water from the coast of Northwestern Anatolia to the Southwestern Crimea similarly to *Caretta caretta* or *Chelonia mydas*. These sea turtles were recorded on the Caucasian coast of the Black Sea and even in the Kerch Strait (Malandzia et al. 2012; Pestov and Kletnoy 2012). However, due to the single *M. rivulata* record and

considerable distance from the distribution range of the species, the probability of transmarine migration is supposed to be low. In any case, our finding indicates that monitoring of terrapin populations throughout the Black Sea coasts would be beneficial for a better understanding of overseas dispersal in *M. rivulata* and reveal possible shifts of northern boundary of its distribution.

Acknowledgments.—We are grateful to Pavel Ruchko (Kerch) and Ilya Turbanov (Borok, Russia) for the data on population density of the exotic turtle *T. scripta* in Kerch. Our special regards are to Yuliya Krasnylenko (Kyiv, Ukraine) for the significant assistance in field research at Kerch peninsula during 2012–2016, and to Uwe Fritz for his valuable comments and suggestions regarding the manuscript content.

Literature Cited

- Broggi MF. 2012. The Balkan Terrapin *Mauremys rivulata* (Valenciennes, 1833), in the Aegean islands. Threats, conservation aspects and the situation of the island of Kea (Cyclades) as a case study. *Herpetozoa* 24: 149–163.
- Fritz U, Freytag O. 1993. The distribution of *Mauremys* in Asia Minor, and first record of *Mauremys caspica caspica* (Gmelin, 1774) for the internally drained central basin of Anatolia (Testudines: Cryptodira: Bataguridae). *Herpetozoa* 6: 97–103.
- Fritz U, Ayaz D, Buschbom J, Kami HG, Mazanaeva LF, Aloufi AA, Auer M, Rifai L, Šilić T, Hundsdörfer

- AK. 2008. Go east: phylogeographies of *Mauremys caspica* and *M. rivulata* — discordance of morphology, mitochondrial and nuclear genomic markers and rare hybridization. *Journal of Evolutionary Biology* 21: 527–540.
- Fritz U, Ayaz D, Hundsdoerfer AK, Kotenko T, Guicking D, Wink M, Tok CV, Çiçek K, Buschbom J. 2009. Mitochondrial diversity of European pond turtles (*Emys orbicularis*) in Anatolia and the Ponto-Caspian Region: Multiple old refuges, hotspot of extant diversification and critically endangered endemics. *Organisms, Diversity & Evolution* 9: 100–114.
- Kukushkin OV. 2013 a. Genesis of the Crimean herpetofauna: a new vision of the problem. Pp. 22–25 In: Commemorative zoological readings. Proceedings of the International scientific conference devoted to 100th anniversary of SL Delyamure and 90th anniversary of SA Skryabin (December 5, 2013, Simferopol). Simferopol.
- Kukushkin OV. 2013 b. Adventive herpetofauna of the Ukraine. Pp. 25–27 In: Commemorative zoological readings. Proceedings of the International scientific conference devoted to 100th anniversary of SL Delyamure and 90th anniversary of SA Skryabin (December 5, 2013, Simferopol). Simferopol. [In Russian].
- Malandzia VI, Dbar RS, Solomko MO, Pestov MV. 2012. Finding of the sea turtle *Chelonia mydas* in the eastern part of the Black Sea. *Current Studies in Herpetology (Sovremennaya gerpetologiya)* 12 (3/4): 155–157. [In Russian].
- Mantziou G, Rifai L. 2014. *Mauremys rivulata* (Valenciennes in Bory the Saint-Vincent 1833) – Western Caspian Turtle, Balkan Terrapin. Pp. 080.1–080.9 In: *Chelonian Research Monographs. No 5. Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of IUCN/SSC Tortoise and Freshwater Turtle Specialist Group*. Editors, Rhodin AGJ, Pritchard PCH, van Dijk PP. et al. Chelonian Research Foundation, Lunenburg, Massachusetts.
- Mantziou G, Poulakakis N, Lymberakis P, Valakos E, Mylonas M. 2004. The inter- and intraspecific status of Aegean *Mauremys rivulata* (Chelonia, Bataguridae) as inferred by mitochondrial DNA sequences. *Herpetological Journal* 14: 35–45.
- Pestov VV, Kletnoy MV. 2012. Finding of the sea turtle *Caretta caretta* at the Russian coast of the Black Sea. *Current Studies in Herpetology (Sovremennaya gerpetologiya)* 12 (3/4): 158–159. [In Russian].
- Sillero N, Campos J, Bonardi A, Corti C, Creemers R, Crochet PA, Crnobrnja-Isailović J, Denoël M, Ficetola GF, Gonçalves J, Kuzmin S, Lymberakis S, de Pous P, Rodriguez A, Sindaco R, Speybroeck G, Toxopeus B, Vieites DR, Vences M. 2014. Updated distribution and biogeography of amphibians and reptiles of Europe. *Amphibia-Reptilia* 35: 1–31.
- Sindaco R, Jeremčenko VK. 2008. The Reptiles of the Western Palearctic. 1. Annotated checklist and distributional atlas of the turtles, crocodiles, amphisbaenians and lizards of Europe, North Africa, Middle East and Central Asia. Edizioni Belvedere, Latina. 579 p.
- Szczerbak NN. 1966. Amphibians and reptiles of the Crimea (Herpetologia Taurica). Naukova Dumka, Kiev, Ukraine. 239 p.
- Tok CV, Çiçek K. 2014. Amphibians and reptiles in the Province of Çanakkale (Marmara Region, Turkey). *Herpetozoa* 27: 65–76.
- Vamberger M, Stukas H, Ayaz D, Lymberakis P, Široký P, Fritz U. 2014. Massive transoceanic gene flow in a freshwater turtle (Testudines: Geoemydidae: *Mauremys rivulata*). *Zoologica Scripta* 43: 313–322.



Oleg V. Kukushkin (born in Sevastopol, November 8, 1973) graduated from M.V. Frunze Simferopol State University in 1991–1995. For the past 15 years he's been a research scientist of the Department of Biodiversity Studies and Ecological Monitoring of T.I. Vyazemski Karadag Scientific Station – Nature Reserve (the Crimea). He is currently working on his Ph.D. thesis titled “Herpetofauna of the Crimean peninsula: Distribution patterns, morphology, biology, genesis pathways, and protection” at the Department of Herpetology, Zoological Institute of the Russian Academy of Sciences (St. Petersburg). He has published over 200 research and popular science papers, mostly in the herpetological field. The recent monograph (*Pysanets E., Kukushkin O. 2016. Amphibians of the Crimea. Kyiv: National Academy of Sciences of Ukraine, National Museum of Natural History. 320 p.*) is among the latest. He is a member of the A.M. Nikolsky Russian Herpetological Society and the Ukrainian Herpetological Society. He is the official expert at the herpetological section of Rare and Endangered Species Commission (Russian Federation). Primary research areas: Distribution, zoogeography, biology, ecology, systematics, and conservation of reptiles and amphibians of the Crimean peninsula. His main scientific interests are: Regularities in the formation of distribution ranges of the Crimean herpetofauna representatives; revealing of relationships of the Crimean amphibians and reptiles populations using molecular and genetic methods in combination with current paleogeography data on the Black Sea region; genesis of the Crimean biota.



Daniel Jablonski is currently a Ph.D. student of Zoology and Evolutionary Biology at the Comenius University in Bratislava, Slovakia. He has been interested in amphibians and reptiles since early childhood. His research interests concern evolutionary and historical biogeography questions relating to the origin and distribution of genetic diversity and its conservation in natural populations of amphibians and reptiles. His special focus is placed in the Balkan Peninsula, one of the most important evolutionary areas in Europe. In parallel, it led to the establishment of the first online herpetofauna mapping of this area in the project: www.Balcanica.info. He loves traveling and photography.